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lumbium), has been found in the mouth of Calumet River, ten miles south of Chicago. In the groves are beautiful Violets, Phloxes, *Oxalis violacea*, the unique *Dodecatheon Meadia*; on the marshes Buckbean (*Menyanthes trifoliata*),* Indian Plaintain (*Cacalia tuberosa*), *Valeriana edulis*, and away back on the prairies are hundreds of acres of tall sedges and grasses abounding in several species of *Liatris*, showy Sunflowers, rank Rosin-plants (*Silphium*), and multitudes of Asters and Golden Rods.

REVIEWS.

THE ANDES AND THE AMAZON. †— This racy account of a six months' trip across the continent of South America is really a valuable contribution to American geographical science. The author's "general route was from Guayaquil to Quito, over the Eastern Cordillera, thence over the Western Cordillera, and through the forest on foot to Napo, down the Rio Napo by canoe to Pebas, on the Marañon, and thence by steamer to Pará." This is a new route of travel, and after a trip to the Pacific shores of our own continent, we should prefer this safe, romantic and unfrequented journey to any other we know of. The ascent of the Nile, the great rivers of Asia, and even the Congo itself, are hackneyed subjects compared to scaling the Andes, passing around Chimborazo, and plunging for a long month into the depths of a South American forest, seeking the sources of the Napo River, with that magnificent sail down the Marañon and Amazon to crown all.

As an illustration of the author's pleasant style (though his facts are not always well arranged) we quote his impressions of Chimborazo:—

"Coming up from Peru through the cinchona forests of Loja, and over the barren hills of Assuay, the traveller reaches Riobamba, seated on the threshold of magnificence—like Damascus, an oasis in a sandy plain, but, unlike the Queen of the East, surrounded with a splendid retinue of snowy peaks that look like icebergs floating in a sea of clouds.

On our left is the most sublime spectacle in the New World. It is a majestic pile of snow, its clear outline on the deep blue sky describing the profile of a lion in repose. At noon the vertical sun, and the profusion of light reflected from the glittering surface, will not allow a shadow to be cast on any part, so that you can easily fancy the figure is cut out of a mountain of spotless marble. This is Chimborazo—yet not the whole of it—you see but a third of the great giant. His feet are as eternally green as his head is everlastingly white; but they are far away beneath the bananas and cocoanut palms of the Pacific coast.

Rousseau was disappointed when he first saw the sea; and the first glimpse of Niagara often falls to meet one's expectations. But Chimborazo is sure of a worshipper the moment its over-

* *Habenaria Calopogon*, three or four species of *Cypripedium*.

† The Andes and the Amazon: or, Across the Continent of South America. By James Orton, With a new map of Equatorial America and numerous illustrations. New York. Harper and Brothers. 1870. 12mo, pp. 356.

whelming grandeur breaks upon the traveller. You feel that you are in the presence-chamber of the monarch of the Andes. There is sublimity in his kingly look, of which the ocean might be proud.

'All that expands the spirit, yet appals,
Gathers around this summit, as if to show
How earth may pierce to heaven, yet leave vain man below.'

It looks lofty from the very first. Now and then an expanse of thin, sky-like vapor, would cut the mountain in twain, and the dome, islanded in the deep blue of the upper regions, seemed to belong more to heaven than to earth. We knew that Chimborazo was more than twice the altitude of Etna. We could almost see the great Humboldt struggling up the mountain's side till he looked like a black speck moving over the mighty white, but giving up in despair four thousand feet below the summit. We see the intrepid Boliver mounting still higher; but the hero of Spanish-American independence returns a defeated man. Last of all comes the philosophic Boussingault, and attains the prodigious elevation of 19,600 feet—the highest point reached by man without the aid of a balloon; but the dome remains unsullied by his foot. Yet none of these facts increase our admiration. The mountain has a tongue which speaks louder than all mathematical calculations.

There must be something singularly sublime about Chimborazo, for the spectator at Riobamba is already nine thousand feet high, and the mountain is not so elevated above him as Mont Blanc above the vale of Chamouni, when, in reality, that culminating point of Europe would not reach up even to the snow-limit of Chimborazo by two thousand feet.* It is only while sailing on the Pacific that one sees Chimborazo in its complete proportions. Its very magnitude diminishes the impression of awe and wonder, for the Andes on which it rests are heaved to such a vast altitude above the sea, that the relative elevation of its summit becomes reduced by comparison with the surrounding mountains. Its altitude is 21,420 feet, or forty-five times the height of Strasburg Cathedral; or, to state it otherwise, the fall of one pound from the top of Chimborazo would raise the temperature of water 30°. One fourth of this is perpetually covered with snow, so that its ancient name, Chimpurazu—the mountain of snow—is very appropriate.† It is a stirring thought that this mountain, now mantled with snow, once gleamed with volcanic fires. There is a hot spring on the north side, an immense amount of debris covers the slope below the snow-limit, consisting chiefly of fine-grained, iron-stained trachyte and coarse porphyroid gray trachyte; very rarely a dark vitreous trachyte. Chimborazo is very likely not a solid mountain: trachytic volcanoes are supposed to be full of cavities. Bouguer found it made the plumb-line deviate 7' or 8'.

The valleys which furrow the flank of Chimborazo are in keeping with its colossal size. Narrower, but deeper than those of the Alps, the mind swoons and sinks in the effort to comprehend their grim majesty. The mountain appears to have been broken to pieces like so much thin crust, and the strata thrown on their vertical edges, revealing deep, dark chasms, that seem to lead to the confines of the lower world. The deepest valley in Europe, that of the Ordesa in the Pyrenees, is 3,200 feet deep; but here are rents in the side of Chimborazo in which Vesuvius could be put away out of sight. As you look down into the fathomless fissure, you see a white fleck rising out of the gulf, and expanding as it mounts, till the wings of the condor, fifteen feet in spread, glitter in the sun as the proud bird fearlessly wheels over the dizzy chasm, and then, ascending above your head, sails over the dome of Chimborazo.‡ Could the condor speak, what a glowing description could he give of the landscape beneath him when his horizon is a thousand miles in diameter. If

'Twelve fair counties saw the blaze from Malvern's lonely height,'

what must be the panorama from a height fifteen times higher!

* But Chimborazo is steeper than the Alp-king; and steepness is a quality more quickly appreciated than mere massiveness. 'Mont Blanc (says a writer in 'Frazier's Magazine') is scarcely admired, because he is built with a certain regard to stability; but the apparently reckless architecture of the Matterhorn brings the traveller fairly on his knees, with a respect akin to that felt for the leaning tower of Pisa, or the soaring pinnacles of Antwerp.'

† 'White Mountain' is the natural and almost uniform name of the highest mountains in all countries; thus Himalaya, Mont Blanc, Hoemus, Sierra Nevada, Ben Nevis, Snowdon, Lebanon, White Mountains of United States, Chimborazo, and Illimani.

‡ Humboldt's statement that the condor flies higher than Chimborazo has been questioned; but we have seen numbers hovering at least a thousand feet above the summit of Pichincha. Baron Muller, in his ascent of Orizaba, saw two falcons flying at the height of full 18,000 feet; Dr. Hooker found crows and ravens on the Himalayas at 16,500 feet; and flocks of wild geese are said to fly over the peak of Kintschingow, 22,756 feet.

Chimborazo was long supposed to be the tallest mountain on the globe, but its supremacy has been supplanted by Mount Everest in Asia, and Aconcagua in Chile.* In mountain gloom and glory, however, it still stands unrivaled. The Alps have the avalanche, 'the thunderbolt of snow,' and the glaciers, those icy Niagaras so beautiful and grand. Here they are wanting.† The monarch of the Andes sits motionless in calm serenity and unbroken silence. The silence is absolute and actually oppressive. The road from Guayaquil to Quito crosses Chimborazo at the elevation of 14,000 feet. Save the rush of the trade wind in the afternoon, as it sweeps over the Andes, not a sound is audible; not the hum of an insect, nor the chirp of a bird, nor the roar of the puma, nor the music of running waters. Mid-ocean is never so silent. You can almost hear the globe turning on its axis. There was a time when the monarch deigned to speak, and spoke with a voice of thunder, for the lava on its sides is an evidence of volcanic activity. But ever since the morning stars sang together over man's creation, Chimbo has sat in sullen silence, satisfied to look 'from his throne of clouds o'er half the world.' There is something very suggestive in this silence of Chimborazo. It was once full of noise and fury; it is now a *completed* mountain, and thunders no more."

The author's description of the great crater of Pichincha is alike interesting. The naturalist will enjoy the sketches of animal and vegetable life, and the physical geology and anthropology of the varied tracts passed over. The map we would draw attention to as undoubtedly the best yet published of the region over which the writer passed. It "was drawn with great care after original observations and the surveys of Humboldt and Wisse on the Andes, and of Azevedo, Castlenau, and Bates on the Amazon." Professor Orton was accompanied by four other gentlemen, and the expedition was sent out under the auspices of the Smithsonian Institution. The specimens of rocks, minerals, plants and animals have been submitted to naturalists, who have mostly reported on them, and many facts new to science in these and on meteorological and geographical subjects have been collected and published by the author. The book closes with a chapter telling us how to travel in South America, with hints about the best routes, the expenses, the best outfit, and the precautions and dangers, with a final word on the consolations of travel:

"As to dangers: First, from the people. Traveling is as safe in Ecuador as in New York, and safer than in Missouri. There are no Spanish banditti, though some places, as Chambo, near Kiobamba, bear a bad name. It is not wise to tempt a penniless footpad by a show of gold; but no more so in Ecuador than anywhere. We have travelled from Guayaquil to Damascus, but have never had occasion to use a weapon in self-defense; and only once for offence, when we threatened to demolish an Arab sheik with an umbrella. Secondly, from brutes. Some traveller would have us infer that it is impossible to stir in South America without being "affectionately entwined by a serpent, or sprung upon by a jaguar, or bitten by a rattlesnake; jiggers in every sand-heap and scorpions under every stone" ('Edinburgh Review' xliii, 310). Padre Vernazza speaks of meeting a serpent two yards in diameter! But you will be disappointed at the paucity of animal life. We were two months on the Andes (August and September) before we saw a live snake. They are plentiful in the wet season in cacao plantations; but the majority are harmless. Dr. Russell, who particularly studied the reptiles of India, found that out of forty-three species which he examined not more than seven had poisonous fangs; and Sir E. Tennent, after a long residence in Ceylon, declared he had never heard of the death of an European by the bite of a snake. It is true, however, that the number and proportion of venomous species are greater in South America than in any other part of the world; but it is

* Mount Everest is 29,000 feet, and Aconcagua 23,200. Schlagintweit enumerates thirteen Himalayan summits over 25,000 feet, and forty-six above 20,000. We have little confidence in the estimates of the Bolivian mountains. Chimborazo has nearly the same latitude and altitude as the loftiest peak in Africa, Kilima Njaro.

† Humboldt ascribes the absence of glaciers in the Andes to the extreme steepness of the sides, and the excessive dryness of the air. Dr. Loomis, above quoted, mentions indications of glacial action—moraines, and polished and striated rocks—on the crest of the Cordillera, between Peru and Bolivia, lat. 21° S.

some consolation to know that, zoologically, they are inferior in rank to the harmless ones; 'and certainly,' adds Sidney Smith, 'a snake that feels fourteen or fifteen stone stamping on his tail has little time for reflection, and may be allowed to be poisonous.' If bitten, apply ammonia externally immediately, and take five drops in water internally; it is an almost certain antidote. The discomforts and dangers arising from the animal creation are no greater than one would meet in travelling overland from New York to New Orleans.

Finally, of one thing the tourist in South America may be assured—that dear to him, as it is to us, will be the remembrance of those romantic rides over the Cordilleras amid the wild magnificence of nature, the adventurous walk through the primeval forest, the exciting canoe-life on the Napo, and the long, monotonous sail on the waters of the Great River."

SKETCHES OF CREATION.*—The scope of this book is fully set forth in the rather lengthy title. The aim of the author is an excellent one and just such a work as this is intended to be is much needed, and we welcome every attempt at popularizing the latest facts and theories of science. Our ideal of such works as these are the writings of Hugh Miller, Huxley, Faraday, Gosse, Quatrefages, and others, who, added to the charms of a pure, simple, pellucid style, present the story of creation, or a glance at fragments of it, in a thoroughly artless way.

The author of the book before us we regret to say has too often, in these "Sketches," looked at nature with the eye of a melodramatist, and sometimes we are drawn off from contemplating the grandeur of some scene in nature by an illtimed attempt at wit, or an awkward straining at effect; the flash and thunder savor too much of the explosive mixtures of the theatre. In short, in attempting to be eloquent and lively and *Figuièresque*, the author sometimes becomes grandiloquent, and his diction falls far short of the sprightly style of his French prototype. In spite, however, of these faults of style the book is a very readable one; the facts are correctly stated; the theories presented with much fairness; the illustrations excellent, and if the whole book had been as well and simply written as the chapters on salt and gypsum, and oil, where the learned author is fully at home, our duty as a critic would have almost been a sinecure. As regards his choice of subjects lovers of the sensational and marvellous will find their cravings fully satisfied in the chapters entitled "The Ordeal by Water," "The Ordeal by Fire," "The Solar System in a Blaze," "The Reign of Fire," "The Tooth of Time," "The Reign of Universal Winter," "The Sun Cooling Off," and "The Machinery of the Heavens Running Down." When the author has endeavored, as he seems to think satisfactorily, to settle so many vexed points in the science of our day we wonder that he "refrains from the attempt to lift the veil which conceals the destiny of other firmaments!"

We close with a few special criticisms. The Orthoceratite may have been a very formidable monster to a trilobite's mind, but for the life of us we do not understand how, considering the probable structure of the

* Sketches of Creation: a popular view of some of the grand conclusions of the sciences in reference to the history of matter and of life, together with a statement of the intimations of science respecting the primordial condition and the ultimate destiny of the earth and the solar system. By Alexander Winchell, LL.D. With illustrations. New York. Harper and Brothers. 1870. 12mo, pp. 469.